

What is claimed is:

1. In a storage network, a method for replicating a first data volume from a first computer to a plurality of remote data volumes stored on one or more remote computers,  
5 said method comprising the steps of:

instructing a first data replication facility at said first computer to replicate said first data volume and to send the replica to multiple remote data volumes;

- 10 in response to the instructing, generating a replica of said first data volume from said first computer at said first data replication facility; and

forwarding said replica from said first data replication facility at said first computer said to said plurality of remote data volumes stored on said one or more  
15 remote computers.

2. The method of claim 1, further comprising the steps of forwarding from said first data replication facility at said first computer to said one or more computers information identifying a storage location on a storage device of said one or more  
20 computers for said replica.

3. The method of claim 1, wherein said first computer forwards said replica to said plurality of remote data volumes in a synchronous manner.

- 25 4. The method of claim 1, wherein said first computer forwards said replica to said plurality of remote data volumes in an asynchronous manner.

5. The method of claim 1, wherein said communication protocol comprises the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite.

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6. The method of claim 1, wherein said first computer and said one or more computers in said storage network operate without a volume manager facility.

7. In a computer network having computers, wherein each of said computers in the  
5 network hosts a data replication facility for remote mirroring of data between said computers, a method comprising the steps of:

receiving a data volume at said data replication facility of a first of said  
computers from said first of said computers for said remote mirroring; and

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replicating said data volume from said first of said computers to multiple other ones of the computers.

8. The method of claim 7, further comprising the step of packaging data with said  
15 replicated data volume that identifies a storage location for said replicated data at each of said multiple other ones of the computers.

9. The method of claim 7 further comprising the step of, replicating said data  
volume from said first of said computers to a plurality of volumes on a second of said  
20 computers.

10. The method of claim 7, wherein said communication protocol comprises  
Transport Control Protocol/Internet Protocol (TCP/IP) protocol suite.

11. The method of claim 7, wherein said replicating said data volume from said first  
25 of said computers to each of said multiple other computers occurs in a synchronous manner.

12. The method of claim 7, wherein said replicating said data volume from said first of said computers to each of said multiple other computers occurs in an asynchronous manner.

5 13. The method of claim 7, wherein said data volume is a logical data volume.

14. The method of claim 7, wherein said data volume is a physical data volume.

10 15. The method of claim 7, wherein said computer network comprises one of a local area network (LAN), a wide area network (WAN), a virtual private network (VPN), an intranet, an extranet and the Internet.

16. The method of claim 7, wherein said computers comprises one of a server, a workstation, a "mainframe" and a personal computer.

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17. The method of claim 7, each of said computers in said network operate without a volume management facility.

20 18. A computer readable medium holding computer executable instructions for replicating a first data volume from a first computer to a plurality of remote data volumes stored on one or more remote computers in a storage network comprising the steps of:

25 instructing a data replication facility at said first computer to replicate said first data volume and to send the replica to multiple remote data volumes;

in response to the instructing, generating a replica of said first data volume at said data replication facility of said first computer; and

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forwarding said replicated data volume from said first computer to said plurality of remote data volumes stored on said one or more remote computers.

19. The computer readable medium of claim 18, wherein said first computer forwards said replicated data volume to said plurality of remote data volumes stored on said one or more of said remote computers in a synchronous manner.

20. The computer readable medium of claim 18, wherein said first computer forwards said replicated data volume to said plurality of remote data volumes on the one or more remote computers in an asynchronous manner.

21. The computer readable medium of claim 18, wherein said communication protocol comprises the Transmission Control Protocol/Internet Protocol (TCP/IP) protocol suite.

22. In a computer network capable of performing remote data mirroring from a first network location to one or more remote network locations, a method of performing said remote data mirroring, said method comprising the steps of:

replicating data from said first network location to a first remote network location of said one or more remote network locations; and

replicating at said first remote network location of said one or more remote network locations, said replicated data from said first network location to a second remote network location of said one or more remote network locations to allow said first network location to perform said remote data mirroring across multiple remote network locations.

23. The method of claim 22, wherein said computer network transmission capacity bandwidth between said first network location and said first remote network location

differs from said computer network transmission bandwidth capacity between said first remote network location and said second remote network location, wherein said first remote network location operates as a secondary data repository to said first network location while operating as an originating location for said remote data mirroring of said replicated data to said second remote network location.

24. The method of claim 22, wherein communication between said first network location to said first remote network location occurs in a first communications manner while communication between said first remote network location and said second remote network location occurs in a second communications manner.

25. The method of claim 24, wherein said first communications manner of comprises synchronous communications.

26. The method of claim 24, wherein said first communications manner comprises asynchronous communications.

27. The method of claim 24, wherein said second communications manner comprises synchronous communications.

28. The method of claim 24, wherein said second communication manner comprises asynchronous communications.

29. The method of claim 22, wherein communications from said first network location to said one or more remote locations occurs in the Transport Control Protocol/Internet Protocol (TCP/IP) protocol suite.

30. The method of claim 22, wherein said first network location and said one or more network locations operate without a volume management facility.

31. A method for replicating data from a first location to a plurality of remote locations, said method comprising the steps of:

replicating a selected data structure at said first location; and

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transmitting said replicated data structure to a first of said plurality of remote locations for replication of said replicated data structure to a second of said plurality of remote locations.

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32. The method of claim 31 further comprising the steps of,

replicating said replicated data structure at said first of said plurality of remote locations; and

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transmitting said replication of said replicated data structure to said second of said plurality of remote locations.

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33. The method of claim 31, wherein said first location communicates with said plurality of remote locations in the Transport Control Protocol/Internet Protocol (TCP/IP) protocol suite.

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34. The method of claim 31, wherein said transmission of said replicated data structure to said first of said plurality of remote locations occurs at a first transmission rate.

35. The method of claim 32, wherein said transmission of said replication of said replicated data structure from said first of said plurality of remote locations to said second of said plurality of remote locations occurs at a second transmission rate.

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36. The method of claim 31, wherein said first location comprises a workstation

executing a first operating system.

37. The method of claim 31, wherein said first of said plurality of remote locations comprises a server executing a second operating system.

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38. The method of claim 31, wherein said first location and said plurality of remote locations operate without a volume manager facility.

39. A computer readable medium holding computer executable instructions for replicating data from a first location to a plurality of remote locations, comprising the steps of:

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replicating a first data structure at said first location; and

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forwarding said replicated first data structure to a first of said plurality of remote locations for replication of said replicated first data structure to a second of said plurality of remote locations.

40. The computer readable medium of claim 39 further comprising the steps of:

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replicating said replicated first data structure at said first of said plurality of remote locations; and

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forwarding said replication of said replicated first data structure to said second of said plurality of remote locations.

41. The computer readable medium of claim 39, wherein said first location communicates with said plurality of remote locations in the Transport Control Protocol/Internet Protocol (TCP/IP) protocol suite.

42. The computer readable medium of claim 39, wherein said forwarding of said replicated first data structure to said first of said plurality of remote locations occurs at a first transmission rate.

5 43. The computer readable medium of claim 40, wherein said forwarding of said replication of said replicated first data structure from said first of said plurality of remote locations to said second of said plurality of remote locations occurs at a second transmission rate.

10 44. The computer readable medium of claim 39, wherein said first location comprises a workstation executing a first operating system.

45. The computer readable medium of claim 39, wherein said first of said plurality of remote locations comprises a server executing a second operating system.

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